

ABSTRACT OF THE DISCLOSURE

This invention provides a new architecture for a communication system between head-ends and end-users which expands bandwidth and reliability of the communication system. A mux-node receives communication signals from a head-end and forwards the received communication signals to one or more mini-fiber nodes. The connection to the head-end is via a small number of optical fibers and the connections to each of the mini-fiber nodes may be via one or more optical fibers that may provide full duplex communication. The head-end may communicate with the mux-node using digital or digital and analog signals. The mini-fiber nodes may combine the signals received from the head-end with loop-back signals used for local media access control prior to forwarding the signals to the end-users. Upstream data are received by the mini-fiber nodes and transmitted to the mux-node. The mux-node may route upstream communication signals received from the mini-fiber nodes as downstream signals to other mini-fiber nodes also connected to the mux-node without head-end interaction.